



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
Fax 613 632-5246

RBE1X56-136-858-27

Job Sheet 189525



Part No: RBE1X56-136-858-27

Job Qty: 2 pcs

Part Name: Counter Holder



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 1/25/19

Job Tracking No:

Due Date: 2/28/19

Created By: Marie Lajeunesse

Type: SOLD

Description:

Note: DWG RBE1X56-136-858 Rev.3 IPP Rev. A 19.01.08 New issue DP Verify DD

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier	Lead Time	Sign-off
					Setup Hrs	Run Hrs			
100	Purchasing	2 pcs	2/28/19	2/28/19	0.00	0.00	Purchasing - 1		APR 30 2019
							Purchasing - 2		
							Purchasing - 3		
110	Packaging 2-1 - Receive - B4B	2 pcs	2/28/19	2/28/19	0.00	0.00	Packaging 2 - 1 - B4B		
							Packaging 2 - 2 - B4B		
							Packaging 2 - 3 - B4B		APR 30 2019
120	QC 6	2 pcs	2/28/19	2/28/19	0.00	0.00	QC 6 - 38		
							QC 6 - 42		
							QC 6 - 9		MAY 02 2019
							QC 6 - 68		DAS 40 9-89
130	Packaging 3-1 - Stock - B4B	2 pcs	2/28/19	2/28/19	0.00	0.00	Packaging 3 - 1 - B4B		
							Packaging 3 - 2 - B4B		
							Packaging 3 - 3 - B4B		
							Packaging 3 - 4 - B4B		
							Packaging 3 - 5 - B4B		DAS 21 9-59
140	QC 21 - SA	2 pcs	2/28/19	2/28/19	0.00	0.00	QC 21 - SA - 21		MAY 06 2019

Part Op 100 - Issue P/O to PJ MACHINAGE; P/O 042423 - Manufacture RBE1X56-136-858-27 as per DWG. -Certificate Descriptions: of Conformity is required

110 - Certificate of Conformity is required

x 2 Re hws 29 Jan 2019

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
RBE1X56-136-858-27P	Counter Holder	2 (1 ea)	100-Purchasing	5176773

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
100-Purchasing	RBE1X56-136-858-27P	2	0	0



Dart Aerospace Ltd.
1270 Aberdeen Street
Howkesbury, ON K64 1K7
CANADA
TEL: 1 813 632-5200
Email: sales@dartaero.com
www.dartaerospace.com

Container No: S176774



Part: RBE1X56-136-858-27

Job No: 189525

Serial No/Batch: S176774

Revision: 3

Inspector:

Exp Date:

Instructions:

Date: 04/30/19

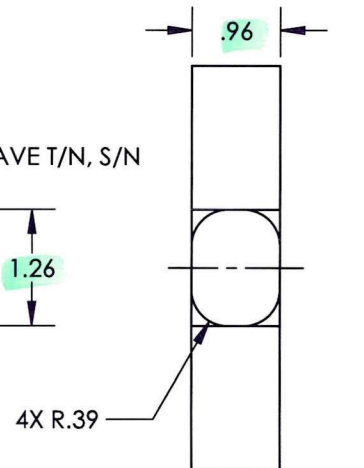
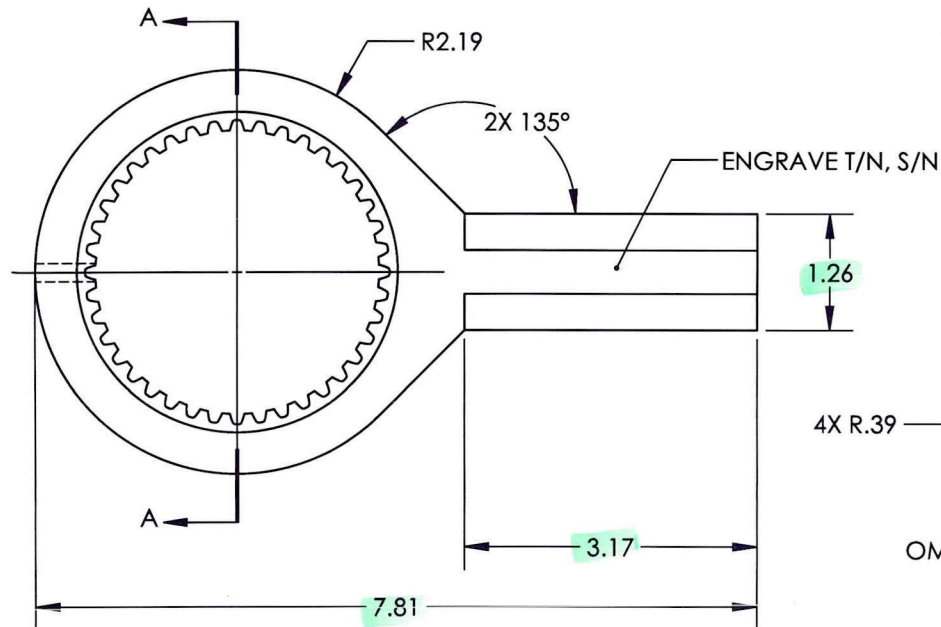
Part Specifications

Specifications could not be found.

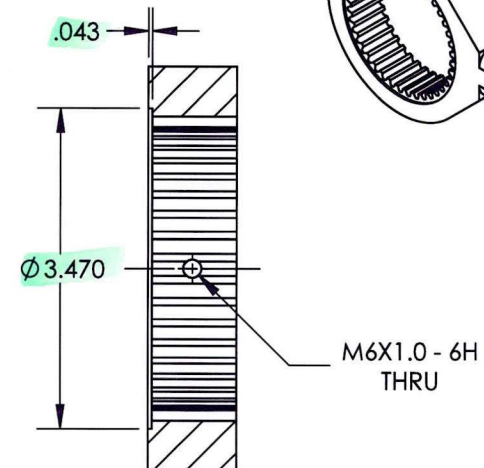
Plex 1/25/19 1:04 PM Dart.lajeunesse.marie

This drawing, specifications, and concepts contained here in are the sole property of Dart Aerospace, and may not be reproduced or used in any fashion without the prior written permission of Dart Aerospace Eugene, OR.

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
3	17-0015	-27 ADDED DIM MINOR DIAMETER Ø3.070. ADDED FINISH SPEC QMSI-6.2.2, B.O. REV D. DELETED VALUES ENTERED NOTE. ADDED ENGRAVE T/N, S/N NOTE.	1/30/2017	RJC	JAG



HIDDEN LINES
OMITTED FOR CLARITY



SECTION A-A

NOTE:
THE INTERNAL SPLINE HAS TO SLIP EASILY
OVER THE -3 EXTERNAL SPLINE.

INTERNAL SPLINE DATA	
No. OF TEETH	40
PITCH DIAMETER	3.150
MODULE	2
PRESSURE ANGLE	20°
MAJOR DIAMETER	
MINOR DIAMETER	Ø3.070
MEASUREMENT CHORDAL/PINS	
PIN DIAMETER	
FILLET RADIUS	

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 189525 MJS
19-01-25

(27)

COUNTER HOLDER

DART AEROSPACE	
TITLE TORQUE MULTIPLIER & COUNTER HOLDER	
DWG NO. RBE1X56-136-858-27	REV 3
MAT'L 4140/4142 HEAT RC 35-39 FINISH BLACK OXIDE SPEC QMSI-6.2.2, B.O. REV D	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .005 FRACTIONS ± 1/8 .XX ± .01 ANGLES ± 5° .X ± .1 SURFACES = 125°
DRAWN BY: WALLRICH CHECKED: DD 07/20/2017 OPPS APPR: AA 07/21/2017 QA APPR: JL 07/24/2017 APPROVED: JAG 07/26/2017	1. BREAK ALL SHARP EDGES .015 x 45° OR .015R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING 3. INTERPRET DIM AND TOL PER ASME Y14.5M-2009
SCALE 1:2	DATE 4/16/2015
SHEET 14 OF 14	

2.



COUNTER HOLDEN

001

4140

242

Pachene!





Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER

PO042423



Supplier: PJM001-VC
P.J. Machinage
1381 Rte Cite-Des-Jeunes
St-Lazare
QC
J7T 2B8
Phone: 450-455-0705

PO No: PO042423
PO Date: 1/29/19
Due Date: 2/28/19
Purchase Order Revision:
Revision Date:
Ship-To Contact: Lussier, Patrick
Phone:

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

Via: Ground
Pymt Terms: Net 30
Freight Terms:
Special Comments: Revision

Items

Line Item	Job	Part	Supplier Part No	Item No	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
1	189525	RBE1X56-136-858-27P			Counter Holder REV 3	Firmed	-	4/5/19	2 Ea	0 Ea	2 Ea	\$1,115.00/Ea	\$2,230.00
2	189528	RBE1X56-136-858-11P			Square Drive Gear REV 3	Firmed	-	4/5/19	2 Ea	0 Ea	2 Ea	\$520.00/Ea	\$1,040.00
3	189529	RBE1X56-136-858-13P			Gear Planet REV 3	Firmed	-	4/5/19	18 Ea	0 Ea	18 Ea	\$110.00/Ea	\$1,980.00
4	189533	RBE1X56-136-858-3P			Housing REV 3	Firmed	-	4/5/19	2 Ea	0 Ea	2 Ea	\$1,200.00/Ea	\$2,400.00
5	189536	RBE1X56-136-858-9P			Gear Sun REV 3	Firmed	-	4/5/19	5 Ea	0 Ea	5 Ea	\$203.00/Ea	\$1,015.00
Grand Total:												\$8,665.00	

DAS
40
9-89

Order Notes

Procurement Quality Clauses
A005 RIGHT OF ENTRY
A008 FIRST ARTICLE INSPECTION (FAI) BY SELLER, (DOCUMENTATION SENT TO DART AEROSPACE)
A012 CHEMICAL AND PHYSICAL TEST REPORTS
A016 PERSONNEL QUALIFICATION
A017 RAW MATERIAL IDENTIFICATION (AS APPLICABLE)
A026 CERTIFICATION OF MATERIAL CONFORMANCE
A041 QUALITY MANAGEMENT SYSTEM
A042 DART NOTIFICATION BY SUPPLIER
A043 RETENTION OF QUALITY DOCUMENT

A048 COUNTERFEIT PARTS AVOIDANCE, DETECTION, MITIGATION AND DISPOSITION PROGRAM

A049 SUPPLIER AWARENESS

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Plex 4/5/19 9:01 AM dart.Lussier.Patrick



7470-A-B-C-E
FM-1020 Rev 20151005
Certificat de Conformité / Certificate of Compliance
(017942-1)

2455, Rue Halpern | Saint-Laurent | Québec | H4S 1N9
Tel: 514-335-3666 Fax: 514-335-3868
www.groupaltech.com

Bon de Livraison / Packing Slip

017942- 1

Livré à / Ship to

PJ MACHINAGE

1381 Rte de la Cité-des-Jeunes
St-Lazare, QC, J7T2B8
CANADA
Tel.: 450-455-0705 Fax.: 450-455-1167

Client / Customer:

PJ MACHINAGE

1381 Rte de la Cité-des-Jeunes
St-Lazare, QC, J7T2B8
CANADA
BUYER:

Date expédition Ship date	Créé Par Generated By	Transport / No de Comptes Courier / Acc. No.	Bon de commande Client Customer Purchase Order No.					
01-Apr-2019	SPARTAKOS BOUNTOURIS		136165					
#Ligne Line#	No. de Série / # Pièce Part Number / Line Item Details Job # / Ref #	Description pièce(s)	CATG. U/M	Comm. /Ordered	Exp/ Shipped	Qté NC/ NC Qty	Qté Scrap/	À venir/ Back Order
1	LOT 27 PARTS Rev.	LOT 27 PARTS 01 -OXIDE BLACK [OXIDE BLACK]	OXIDE-BLACK MIN-CHG	27	27	0	0	0

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Notes Additionnelles / Additional Notes

Epaisseur réelle
Actual Thickness

Inspecteur Qualité
Quality Inspector

Réçu par
Received By

Nous certifions que les pièces énumérées ci-dessus ont été traitées en conformité avec votre commande et vos spécifications et rencontrent les exigences.
Notre responsabilité financière et légale ne sera pas supérieure au montant de la facture issue.

We hereby certify that the parts listed above have been process in accordance with your purchase order and specifications and are in conformance with your requirements.
Our financial and legal responsibility will not be higher than the amount of invoice.

Shipping Order

29/01/2019

P.J. Machinage (9052 9470 Qc Inc).
1381, Rte Cité-Des-Jeunes,
St-Lazare, Qc
J7T 2B8

Tel. : 450 455-0705

Order : 7470
Reference : PO042423-S/O : 7470
Bid : 15661

Customer : 628

Ship To

Dart Aerospace Ltd.
Accounts payable
1270 Aberdeen St
Hawkesbury, Ontario
K6A 1K7

Same

Fax: 1 613 632-5246

Item No.	Description	Qty	Qty. Delivere	B/O Qty	
001	RBE1X56-136-858-27 Rev 3 Counter Holder (J-7470-A)	2	2 ✓	Ø	DAS 40 9-89
002	RBE1X56-136-858-11 Rev 3 Square Drive Gear (J-7470-B)	2	2 ✓	Ø	
003	RBE1X56-136-858-13 Rev 3 Gear Planet (J-7470-C)	16	18 ✓	Ø	
004	RBE1X56-136-858-3 Rev 3 Housing (J-7470-D)	2	2 ✓	Ø	
005	RBE1X56-136-858-9 Rev 3 Gear Sun (J-7470-E)	4	5 ✓	Ø	

P.J. Machinage retains ownership of all goods sold and other work-product delivered to or performed for its customer until full and complete payment of the underlying invoice, even in circumstances where the part to be machined or materials were provided by the customer. In cases where the part of materials belonged to the customer before it is remitted to P.J. Machinage for the purpose of performing work thereon, its delivery to P.J. Machinage shall entail a transfer of the underlying rights of ownership of the customer over said part or materials.

Shipping : Your truck
Package No : _____
Merchandise Received: 3/4/2015

Ref. : Dicom : 044034756

PJ Machinage

Certificate of conformance

Sold to:

Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON, K6A 1K7

Supplier address:

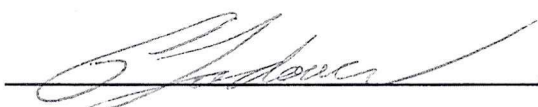
PJ Machinage
1381 Route Cité-Des-Jeunes
St-Lazare, Qc, J7T 2B8

Purchase Order: PO042423

This is to certify that the below names items were inspected and/or tested to your drawings, specifications and purchase order. Objective evidence are shipped with the products and are on file to support the verifications and/or tests and can be made available on request, unless otherwise noted.

<u>Part Number</u>	<u>Quantity</u>	<u>Description</u>
RBE1X56-136-858-27 ✓ Rev. 3	2 ✓	<u>Counter Holder</u>
RBE1X56-136-858-11 ✓ Rev. 3	2 ✓	<u>Square Drive Gear</u>
RBE1X56-136-858-13 ✓ Rev. 3	18 ✓	<u>Gear Planet</u>
RBE1X56-136-858-3 ✓ Rev. 3	2 ✓	<u>Housing</u>
RBE1X56-136-858-9 ✓ Rev. 3	5 ✓	<u>Gear Sun</u>

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9-89

 , April 03, 2019

7470-A

METCOR INC.

660 BOUL. ARTHUR-SAUVÉ, ST-EUSTACHE, QC, J7R 5A8

Tél.: 450-473-1884

Télécopieur / Fax administration: 450-491-5498

Télécopieur / Fax production: 450-491-6454

Certificat de Conformité Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
334856	1

CLIENT / customer 238

P.J. MACHINAGE

1381 ROUTE LA CITÉ DES JEUNES

ST-LAZARRE

QC J7T 2R8

LIVRÉ À / shipped to:

P.J. MACHINAGE

1381 ROUTE LA CITÉ DES JEUNES

ST-LAZARRE

QC J7T 2R8

COMMANDE DU CLIENT customer po	CLASSIFICATION PIECE part classification	MATÉRIEL material	MAÎTRE D'OEUVRE prime contractor	PROGRAM
138103	N/A	4140		

SPÉCIFICATIONS DU PROCÉDÉ

processing specifications

SEL HARDEN

HARDEN AND TEMPER

EXIGENCE / requirement SPÉCIFICATIONS / specified TESTS EXÉCUTÉS / performed RÉSULTATS DE TESTS / results

HARDNESS

35 - 38 HRC

2

37 - 38 HRC

(907)

QUANTITÉ quantity	POIDS weight	DESCRIPTION DES PIÈCES parts description
2	6	RBE1X 56-136-858-27 (2) RBE1X56-136-858-27 1 BOITE DE CARTON

DAS
40
9-89

COMMENTAIRES / comments

APPROUVÉ par / Approved by:

DATE: 2019-03-19

Pierre Ploué
Chief Inspector



5-7470-A

Chemical certification Certification chimique
--

Order Num / No. Commande 63627	Vendor / Fournisseur 46	Country of origin / Pay d'origine SLOVENIA	Date 11/15/18	Heat / coulée 306356	Material ID # / No. matière
Grade / Nuance 4140 PLT	Conditions HEAT TREATED Q&T E + VD				
Shape / Forme FLT	Size / Dimension 1.250	Specifications ASTM A829/A829M			

Chemical composition / Analyse chimique				
Carbon (C)	Silicon (Si)	Manganese (Mn)	Phosphorus (P)	
Mini / maxi 0.3700 / 0.4400	0.1500 / 0.3500	0.8500 / 1.1000	0.0100 / 0.0190	
Actuel % 0.430	0.233	0.828	0.009	
Sulphur (S)	Chromium (Cr)	Nickel (Ni)	Molybdenum (Mo)	
Mini / maxi 0.0200 / 0.0400	0.7500 / 1.2000	0.1000 / 0.2000	0.1500 / 0.2500	
Actuel % 0.000	1.050	0.160	0.210	
Copper (Cu)	Vanadium (V)	Aluminum (Al)	Tungsten (W)	
Mini / maxi 0.1900 / 0.2900	0.0400 / 0.0500	0.0000 / 0.0000	0.0000 / 0.0000	
Actuel % 0.204	0.033	0.031	0.000	
Cobalt (Co)	Titanium (Ti)			
Mini / maxi 0.0000 / 0.0000	0.0000 / 0.0000	0.0000 / 0.0000	0.0000 / 0.0000	0.0000 / 0.0000
Actuel % 0.000	0.000	0.000	0.000	0.000
Mechanical properties / Propriétés Mécaniques				
Yield strenght / Élasticité	Tensile / Rés. à la traction	Elongation / Allon. (%)	Red. of area / Surface (%)	RC
0.000 PSI	0.000 PSI	0.00	0.00	
				Surface Hd / Dureté
				285-317 BHN

Note:

We certify that the above data has been verified and are conform to an original mill or supplier certificate supplied to us with the material

Nous certifions que les données ci haut on été vérifier et sont conformes d'après un certificat originale qui nous a été fourni par notre fournisseur.


 Prepared by: / Préparé par:

CERTIFICATE OF TEST CERTIFICAT D'ESSAIS



Earle M. Jorgensen
(Canada) Inc.

7470-B

Page 02 of 02

Certification Date
12-SEP-2017

FORMER ORDER NUMBER
NUMÉRO DE COMMANDE DU CLIENT

133616
PART NUMBER/NUMÉRO DE PIÈCE
506429

EARLE M JORGENSEN CAN DIV RMCL
1255, AVE LAPLACE
VILLE DE LAVAL QC H7C 2N6

Invoice Number
T370153

SOLD TO: P.J. MACHINAGE
VENDU À: 9052-9470 QUEBEC INC
1381 ROUTE DE LA CITE DES JEUNES
SAINT- LAZARE QC J7T 2B8

SHIP TO:
EXPÉDIÉ À:

P.J. MACHINAGE
9052-9470 QUEBEC INC.
1381 ROUTE CITE DES JEUNES
SAINT- LAZARE QC J7T 2

Description: 4140/4142 HR HT BAR STRESS FREE 269/321 BHN
1-1/2 RD X 20' R/L Line Total: 241 LB

HEAT: 75066774 ITEM: 506429

END-QUENCH HARDENABILITY (JOMINY - RC)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
57	57	57	57	57	57	56	55	54	52	51	50	49	48	47
16	18	20	22	24	26	28	30	32						
46	45	44	44	42	42	40	40	38						

GRAIN SIZE : 5 - 8

MATERIAL IS FREE FROM MERCURY CONTAMINATION
NO WELD REPAIR PERFORMED ON MATERIAL

THERMAL TREATMENT: OK

AUSTENIZE 1650 1.00

QUENCH 0 0.00 WATER

TEMPER 1400 1.00

MACRO: OK

MICRO1: OK

COMMENTS

melted and mfg in usa
reduction ratio 38.5:1

The above data were transcribed from the manufacturer's Certificate of Test after verification for completeness and specification requirements of the information on the certificate. All test results remain on file subject to examination. /Les informations ci-haut-mentionnées sont transcrites du certificat d'essais du manufacturier après vérification de l'état complet des spécifications inscrites sur le certificat. We hereby certify that the material covered by this report will meet the applicable requirements described herein, including any specification forming a part of the description. /Par les présentes, nous certifions que le matériel couvert par ce rapport rencontre les spécifications décrites ci-haut.

The willful recording of false, fictitious, or fraudulent statements in connection with test results may be punishable as a felony under federal statutes. /Les informations fausses, fictives ou frauduleuses en rapport avec le résultat des essais sont punissables en vertu des lois fédérales.

Material did not come in contact with mercury while in our possession. /Par les présentes, nous certifions que le matériel couvert par ce rapport rencontre les spécifications décrites ci-haut.

JOANNE DESPRES



ACIER VANGUARD LTÉE

2205 de l'Aviation, DORVAL, QUÉBEC, Canada, H9P 2X6.

Tel: (514) 685-1515 fax: (514) 685-1516

CERTIFICATE OF COMPLIANCE / CERTIFICAT DE CONFORMITÉ

Order No. / No. Commande	CUSTOMER / CLIENT	Packing slip / No. d'expédition	DATE
Order No. / No. Commande 134654	CUSTOMER / CLIENT P. J. MACHINING	Packing slip / No. d'expédition L39989-01	DATE 17-04-18
MATERIAL ID# / No. MATÉRIEL 2018-	GRADE / NUANCE AISI 4140	HEAT TREATMENT / TRAITEMENT THERMIQUE Q.T.S.R / TREMPÉ REVENU - RECUIT DE DÉTENTE (RONDS)	HEAT / COULÉE 177569
SHAPE / FORME Round / Rond	SIZE / DIMENSION 1.000" in.	SPECIFICATIONS ASTM A193-193M-01,A434-90a-BC,A304-05,A322-13	
PAYS D'ORIGINE:	U.S.A.		

CHEMICAL COMPOSITION / ANALYSE CHIMIQUE

Carbon (C)		Silicon (Si)		Manganese (Mn)		Phosphorus (P)	
mini/maxi	0.380 0.430	0.150 0.350		0.750 1.000			0.035
actuel (%):	0.410	0.230		0.890		0.013	
Sulfur (S)		Chromium (Cr)		Nickel (Ni)		Molybdenum (Mo)	
mini/maxi	0.040	0.800 1.100		0.000 0.250		0.150 0.250	
actuel (%):	0.020	0.847		0.089		0.159	
Copper (Cu)		Vanadium (V)		Aluminium (Al)		Tungsten (T)	
mini/maxi	0.350	---	---	---	---	---	---
actuel (%):	0.250	0.028		0.003		0.000	

MECHANICAL PROPERTIES / PROPRIÉTÉS MÉCANIQUES

Yield strength / Élasticité	Tensile / résistance à la traction	Elongation / allongement (%)	Reduction of area / surface (%)	Hd/dure surface
138,000	148,000	17.0%	52.0%	271 BHN

No weld repairs performed during the manufacturing of this product. We hereby certify that the above results have been verified and conform to the above mentioned specifications. Material is Mercury free, without radioactivity.

Aucune réparation exécutée par soudure durant la fabrication de ce produit. Par la présente nous attestons que les résultats ci-haut mentionnés ont été vérifiés et sont conformes aux spécifications. Pas de contact au Mercure, sans radioactivité.

Keith BALL - Branch Manager

CERTIFICATE OF TEST

7470.D

Page 01 of 02

Certification Date
4-FEB-2019

CUSTOMER ORDER NUMBER

63631

Invoice Number
S716019

CUSTOMER PART NUMBER

SOLD TO:	ACIER ANICA STEEL INC.	SHIP TO:	ACIER ANICA STEEL INC.
	540 AVENUE FIRING		540 AVENUE FIRING
	BAIE D'URFE QC H9X 3T2		BAIE D'URFE QC H9X 3

Description:	4140/4142 HR HT BAR STRESS FREE 269/321 BHN	
3-1/2 RD X 20' R/L		Line Total: 622 LB
HEAT: YQL	ITEM: 506444	

Specifications:		
ASTM A193 GR B7	ASTM A434 GR BC	ASME SA193 GR B7

CHEMICAL ANALYSIS

C	SI	MN	P	S	CR	MO
0.425	0.23	0.96	0.033	0.024	1.0600	0.185

R602949

COUNTRY OF ORIGIN : INDIA

MECHANICAL PROPERTIES

DESCRIPTION	YLD STR	ULT TEN	%ELONG	%RED	HARDNESS
	KSI	KSI	IN 02 IN	IN AREA	BHN
	122.54	145.78	18.5	55.0	292

GRAIN SIZE : 6 -

CLEANLINESS

	A		B		C		D	
	THIN	THICK	THIN	THICK	THIN	THICK	THIN	THICK
	MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX
e45	1.5	0.5	0.5	0.0	0.0	0.0	1.5	0.5

The above data were transcribed from the manufacturer's Certificate of Test after verification for completeness and specification requirements of the information on the certificate. All test results remain on file subject to examination.

Material did not come in contact with mercury while in our possession.

JAMES MURPHY

We hereby certify that the material covered by this report will meet the applicable requirements described herein, including any specification forming a part of the description.

The willful recording of false, fictitious, or fraudulent statements in connection with test results may be punishable as a felony under federal statutes.

7470-D



R.L. STEELS & ENERGY LTD.

OUT NO. 78-81, PANGRA SHIVAR, CHITGAON
PAITHAN ROAD, AURANGABAD-431079 (M.S.) INDIA
TEL NO: 02431-251453, 251163. FAX : 02431-251879
MILL/METALLURGICAL TEST CERTIFICATE

CUSTOMER: SHIPPING MARK:- MANASUK-3

Certificate No: 18-034-3
Page: 01
DATE: 14.10.2018

Invoice No: RLS/18-19/169 Date: 14.10.2018 Approx Length: 15' TO 17.5 feet

Chemical Composition:

Sr. No.	Heat No.	Grade & Size in mm	Specified MIN	C%	Si%	Mn%	P%	S%	Cr%	Mo%	Ni%	AL%	Cu%	Se%	Ti%	BUNDLE NO.	QTY MT
1	YQL	SAE4140 3.1/2" DIA	MAX	0.49	0.35	1.19	0.033	0.040	1.20	0.25	-	-	-	-	-	1-11	16.410
			Actual	0.425	0.29	0.96	0.023	0.024	1.06	0.185	-	-	-	-	-		

METALLURGICAL TESTING

Sr No	INCLUSION RATING						Grain Size ASTM	Surface Decade	As Rolled Micro Structure	Hardness in BHN	PHYSICAL PROPERTIES (H & T CONDITION)					MACRO (ASTM E-309)	
	A		B		C						D		Y.S. Ksi	U.T.S. Ksi	Elongation		R.A.
	T	H	T	H	T	H					T	H					
SPEC	-		-		-		-		5 or finer	-	-	91 Min	115 Min	18% Min	50% Min	SCB252	
1	1.5	0.5	0.5	-	-	-	1.5	0.5	6 - 7	-	-	269-321	292-298	141.78	18.50%	55.00%	C2R252

1) MFG ROUTE:- EAF->LRF->VD->CCP-with MEMS-ILM

2) Billet Size - 340X280 MM

3) Calcium Silicide Treatment - Given

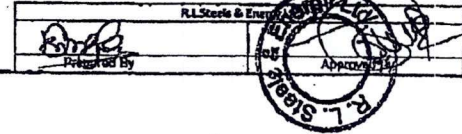
4) Condition Of Supply :- "HR-HIT - STRESSED RELIEVED OR STRESS FREE"

5) 100% SPARK / SPECTRAL TEST DONE

6) MPI Test :- 100% PASS

7) 100% Ultrasonic Test - Satisfactory

8) Specification Requirements :- "ASTM A153 GR B7, A434 CL BC, ASME SA 193 GR B7"



506444 R602949

CERTIFICATE OF TEST CERTIFICAT D'ESSAIS



Earle M. Jorgensen
(Canada) Inc.

7470-E

Page 01 of 03

Certification Date
16-JAN-2018

CUSTOMER ORDER NUMBER
NUMÉRO DE COMMANDE DU CLIENT

134149

PART NUMBER/NUMÉRO DE PIÈCE

506427

EARLE M JORGENSEN CAN DIV RMCL
1255, AVE LAPLACE
VILLE DE LAVAL QC H7C 2N6

Invoice Number
T374578

SOLD TO: P.J. MACHINAGE
VENDU À: 9052-9470 QUEBEC INC
1381 ROUTE DE LA CITE DES JEUNES
SAINT- LAZARE QC J7T 2B8

SHIP TO: P.J. MACHINAGE
EXPÉDIÉ À: 9052-9470 QUEBEC INC.
1381 ROUTE CITE DES JEUNES
SAINT- LAZARE QC J7T 2

Description: 4140/4142 HR HT BAR STRESS FREE 269/321 BHN
1-1/4 RD X 20' R/L Line Total: 92 LB
HEAT: 75066844 ITEM: 506427

Specifications:

ASTM A193 GR B7 16
ASTM A322 13
EN 10204 3.1
MIC 12016 ADD 1 16
ASTM A255 10
ASTM E381 01

ASTM A434 GR BC 17
ASTM AQ962 SEC 5 14
CAT 1E0024
ASTM E112 13
ASTM A304 16
ASTM A370 17

ASME SA193 GR B7
JDM AO QL-2 7/96
ASTM A29/A29M 16
ASTM E10 15
ASTM E45 METHOD A 13
ASTM E8 16

CHEMICAL ANALYSIS

C	MN	P	S	SI	NI	CR	MO
0.41	0.90	0.013	0.03	0.25	0.15	0.89	0.17
CU	SN	AL	V	CA	NB	H	
0.26	0.012	0.026	0.003	0.0011	0.003	0.0001	

RCPT: R262433

COUNTRY OF ORIGIN : USA

MECHANICAL PROPERTIES

DESCRIPTION	YLD STR KSI	ULT TEN KSI	%ELONG IN 02 IN	%RED IN AREA	HARDNESS BHN
	129.0	143.0	21.4	57.0	283

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The willful recording of false, fictitious, or fraudulent statements in connection with test results may be punishable as a felony under federal statutes. /Les informations fausses, fictives ou frauduleuses en rapport avec le résultat des essais sont punissables en vertu des lois fédérales.

Material did not come in contact with mercury while in our possession./Par les présentes, nous certifions que le matériel couvert par ce rapport rencontre les spécifications décrites ci-haut.

JOANNE DESPRES

MANAGER QUALITY ASSURANCE

CERTIFICATE OF TEST CERTIFICAT D'ESSAIS



Earle M. Jorgensen
(Canada) Inc.

7470-E

Page 02 of 03

Certification Date
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SAINT- LAZARE QC J7T 2B8

SHIP TO: P.J. MACHINAGE
EXPÉDIÉ À: 9052-9470 QUEBEC INC.
1381 ROUTE CITE DES JEUNES
SAINT- LAZARE QC J7T 2

Description: 4140/4142 HR HT BAR STRESS FREE 269/321 BHN
1-1/4 RD X 20' R/L Line Total: 92 LB

HEAT: 75066844 ITEM: 506427

END-QUENCH HARDENABILITY (JOMINY - RC)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
57	57	57	57	57	57	56	55	54	52	51	50	49	48	47
16	18	20	22	24	26	28	30	32						
46	45	44	44	42	42	40	40	38						

IDEAL DIAMETER : 5.26 IN GRAIN SIZE : 5 - 8

CLEANLINESS

	A		B		C		D	
	THIN MAX	THICK MAX	THIN MAX	THICK MAX	THIN MAX	THICK MAX	THIN MAX	THICK MAX
avg	1.3	0.5	1.0	0.1	0.1	0.0	1.4	0.5

STRAND CAST VACUUM DEGASSED
MATERIAL IS FREE FROM MERCURY CONTAMINATION
NO WELD REPAIR PERFORMED ON MATERIAL
THERMAL TREATMENT: OK
AUSTENIZE TEMP 1650 F TIME (MIN.) 0.70
QUENCH TEMP 95 F TIME (MIN.) 0.20 MEDIA WATER
TEMPER TEMP 1400 F TIME (MIN.) 0.70
MACRO: OK
MICRO1: OK

COMMENTS

red ratio 55.5 to 1.0

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Material did not come in contact with mercury while in our possession. /Par les présentes, nous certifions que le matériel couvert par ce rapport rencontre les spécifications décrites ci-haut.

JOANNE DESPRES

MANAGER QUALITY ASSURANCE

CERTIFICATE OF TEST
CERTIFICAT D'ESSAIS



Earle M. Jorgensen
(Canada) Inc.

7470-G

Page 03 of 03

Certification Date
16-JAN-2018

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134149

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SHIP TO:
EXPÉDIÉ À:

P.J. MACHINAGE
9052-9470 QUEBEC INC.
1381 ROUTE CITE DES JEUNES
SAINT- LAZARE QC J7T 2

Description: 4140/4142 HR HT BAR STRESS FREE 269/321 BHN
1-1/4 RD X 20' R/L
HEAT: 75066844
100% melted & mfg in usa
free from radioactive material

ITEM: 506427
Line Total: 92 LB

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JOANNE DESPRES

MANAGER QUALITY ASSURANCE

FOR -3 INTERNAL

PIN DIA = 0.0600

MEASUREMENT UNDER PINS = 2.5710

FOR -3 EXTERNAL

PIN DIA = 0.1438

MEASUREMENT OVER PINS = 3.3912

FOR -27 INTERNAL

PIN DIA = 0.1438

MEASUREMENT UNDER PINS = 2.9680